

the CANNON

January 12, 1982

University of Toronto Engineering Society

Vol. IV No. 5



This year's Cannonhall will be held at the Sheraton Centre Hotel on Saturday, January 30. The price has been set at \$35 per couple. Tickets will go on sale soon.

Microelectronics Centre Established at U of T

by John Samochin
Eng Sci 8T3

The University of Toronto will soon be establishing a Microelectronics Development Centre to assist Ontario's industries in applying Very Large Scale Integrated circuitry (VLSI). An Integrated Circuit (IC) may be defined as a single semiconductor device which contains built in capacitors, resistors, diodes and transistors so that there is an inseparable association between elements on or within a continuous supporting material, most commonly silicon. The circuitry may be built to perform digital operations such as logic gating or analog functions such as amplification, integration or differentiation. Large scale integrated circuitry was introduced when the density of previously discrete components on the integrated circuit was greatly increased. The latest step forward is very large scale integration wherein component density can reach up to about 4 thousand circuit elements on a single silicon chip. The Microelectronics Centre is to be established as a company fully owned by the University of Toronto with the following directors: Gordon R. Slemon, Dean of Engineering, and Professors Sedra and Salama, both of the electronics group of Electrical Engineering.

In an interview, Prof. Sedra pointed out that the Centre was not a research institute but a

definite company offering a service unique in Canada. Initial funding for the Centre is directly from the Federal Department of Industry, Trade and Commerce; the grant consisting of \$1M over a five year period. Although the Centre will be separate from the University of Toronto, it will provide access to integrated circuit facilities not now available at U of T. The Centre will also foster and develop a closer relationship between the Faculty of Engineering and industry. Research contracts for VLSI work may be awarded to individual professors at U of T and the Centre's facilities may be accessible in this manner. Currently, Prof. Salama is looking into the possibilities of establishing a VLSI research group independent of the Microelectronics Centre. In conjunction with this goal, a new graduate course was started last year in VLSI design alone, taught by Prof. Salama and Prof. Vranesic.

The Microelectronics Centre will be providing customers with custom and semi-custom integrated circuit design. Custom integrated circuits are specific IC's designed for specific functions as desired by a customer. Semi-custom IC's are mass produced with a high density of logic gates and other components which are not connected so that they may be customized to most requirements. The Centre will actually design the layout or in-

terconnection pattern for an IC which will then realize the desired specifications. Sophisticated computer aided design (CAD) techniques will be required for this, and Prof. Sedra emphasized that a strong CAD facility would result. With custom IC's, analog and digital functions may be realized on a single chip with a transistor density in the future of up to 1/2 million components on a chip. The fabrication of the design will be done at the Centre and

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Incidental Fee

Committee Debates Eng Soc Response

A proposal by Gordon Slemon, Dean of the Faculty of Applied Science and Engineering, to have students pay a \$100 incidental fee towards the Faculty budget gained tentative acceptance from the Engineering Society Council. After hearing the Dean at the December 1 meeting, Council voted 60-3 to support the proposal in principle. A committee has been formed to consider the issue further.

In his presentation to council, Dean Slemon made note of a budget deficit of approximately \$500 per student in the area of supplies, equipment, and teaching assistants. The Canadian Accreditation Board—the body which ensures the maintenance of engineering education standards—has expressed concern over the funding situation. Dean Slemon stated, "The time has come for all of us in the Faculty to assert our determination to correct this situation." The \$100 collected from each student would go directly to reduce the deficit in this area which is most directly related to students.

Michael Nettleton (Ind IV) was appointed chairman of the Special Proposed Incidental Fees (SPIF) committee with a mandate to examine the issue and make recommendations to Council about a plan of action on the proposal.

At its first meeting, held January 7, the committee discussed many of the concerns expressed at the Council meeting about the implications of the proposal. Committee members felt that some means were necessary to ensure the money was being properly spent. Deborah Fletcher (Mech 8T4 Faculty Council rep) suggested a yearly review meeting of Faculty and Department heads with Eng. Soc. officials to go over how the money was being spent, to examine the effectiveness of the program, and to discuss the efforts being made to develop alternate forms of funding.

All members of the committee felt that the levy should not become permanent, and that it is only a temporary measure until more desirable forms of funding can be developed. A three year term was proposed, so that the temporary nature of the fee would be stressed. Furthermore, after three years, some of the people involved in this initial decision would still be in the Society and would be able to assess the success of the program.

The approval of the proposal would send a powerful message to the University and the provincial government about the concern of engineering students over the quality of their education. There was concern that these bodies may use the \$260,000 raised through the incidental fee as an excuse to reduce their funding levels by a similar amount. The committee members felt that some provisions must be made to ensure that students are not left "holding the bag".

Andrew Alberti (Executive Faculty Council rep) wondered whether all students in the Faculty would benefit equally from the fee. He used the example of Geological Engineering where students take most of their courses from the Department of Geology. The equipment, supplies, and teaching assistants come mainly from Arts and Science, and may not be affected by the \$100 fee.

The SPIF committee meets again January 18 at 5:00 p.m. in the Engineering Society offices to continue its deliberations and to prepare a report for presentation to Council at its January 26 meeting.

This Month

Engineering Forum: Robotics

With the growing interest in robotics, U of T has introduced instruction, at the graduate level, in robot control. In conjunction, a robot has been purchased by Mechanical Engineering..... page 3

The Varsity

Many Engineers dislike the present version of U of T's original undergraduate newspaper, *The Varsity*. One student submits his views on the paper's editorial policy in theory and in practice..... page 2

Godiva Week

Although this much awaited festival has already started, the CANNON has included a guide to the events for the remainder of the week. Don't miss out on the fun..... page 4

the CANNON

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THE CANNON is a publication of the University of Toronto Engineering Society. It is published monthly to announce Eng. Soc. events, discuss Faculty and University matters, and present technical information of interest to Engineering undergraduates. Subscriptions are available, call Ella at 978-2917. Anyone interested in helping with THE CANNON is most welcome.

THE CANNON encourages submissions; please type or write legibly. Deadline for articles is one week before publication date, notices and letters by 5:00 p.m. the Friday prior to publication. Comments on THE CANNON or articles appearing in it are appreciated. The editors reserve the right to edit letters for brevity.

The Varsity and Objectivity

by Wayne Levin
Ind Eng 8T3

The Varsity is well known around campus as being the authority of printing material pertaining to student and current affairs. It receives income primarily from two sources: students, through an incidental payment of \$1.25, and from advertising. Its costs may be broken down into three categories: delivery, typesetting and printing. On the surface one would consider their payment toward *The Varsity* as being justified since the newspaper has been around for over 100 years and, presumably, it has established a reputation as being objective and responsible. However, most engineers feel differently.

It is this difference that I care to comment on. *The Varsity* has an editorial board. It consists of thirteen members of which ten are elected from the student population and the remaining are members of *The Varsity* staff. Of the elected members, two represent professional faculties. One of

these is Mike Freedman, who happens to be in engineering. Recently, I phoned *The Varsity* to speak with the financial director only to discover that there was none. I pointed out to B.J. Del Conte, the editor, that last year *The Varsity* had \$246,105 in revenue and \$228,665¹ of operating expenses.

The Varsity and Finances

Considering the size of these figures, it seems odd to me that there would be no one responsible for controlling expenditures and revenues. I should point out that Del Conte was unaware that I was making my enquiry in order that I may obtain material for this editorial. I did, however, make him aware of this and I apologize then as I do again now. Continuing on, I pointed out to him that last year *The Varsity* had a net income of around \$17,500². Del Conte had no comment on this matter except to say that most people involved with *The Varsity* were proud of the fact that they made money when previously their financial situation was rather bleak. I feel strongly that *The Varsity* (being an institution for students which is run by students) should be spending money for the students' benefit and should not, therefore, be trying to make money. One questions the validity of the student incidental fee since it appears that approximately half of the funds collected results in a net income. Although Del Conte says that there are plans for this money, they should be proud of the fact that they do not lose money.

Leaving aside my financial criticisms, I pulled out a copy of *The Varsity* which was circulated during the first term of this year. I was trying to find out how Del Conte justifies *The Varsity's* editorial policy. Specifically, I wanted to know how he exonerates the fact that if a reader is dissatisfied with the way a particular story was handled, and if that reader were to write a letter to the editor indicating his disapproval, why the editor feels it is acceptable to print a rebuttal to the reader's views. Del Conte states that this is only done if there is factual misrepresentation in the reader's declaration. I pointed out that this was not always the case.

Editorial Performance

In order to understand the nature of this sort of editorial performance, I contacted two well known and generally considered respectable Toronto newspapers: *The Toronto Star* and *The Globe and Mail*. Gord Gillies pointed out that the *Star* has never printed any type of reply to any letter written to the editor "since day one." Gillies says that by doing so the paper would be taking the defensive and he considers it to be poor journalism. Gillies continued by saying that if the original story covered all angles, then the story should be able to stand on its own merit. In other words, if the story was well

covered, the reading audience should be allowed a clear, unprejudiced choice between what the disagreeing reader suggests is true, and what the original story dictates to be correct.

Jean Howarth of *The Globe and Mail* points out that rarely, and only in the case where the reader does not have their facts straight, does the *Globe* print a statement. She feels that any reply on the part of the editor when it comes to matters of opinion is very wrong and is, in a way, not allowing the readers their right to free speech. Frankly, I cannot find any reason to believe otherwise.

According to Del Conte's statement, one would think that *The Varsity* follows this policy as well. However, judging by their performance, I find this hard to believe. In *The Varsity* selected, I found a letter to the editor from Gregory Milavsky. Milavsky, Vice-President of the Students Administrative Council (SAC) and an engineering student himself, was writing with regard to the way in which *The Varsity* handled a story relating to the SAC first year handbook. Immediately following Milavsky's letter was a statement written by Del Conte. In it, he attempted to disprove every point that Milavsky raised. In addition, Del Conte stated something to the effect that (and I am paraphrasing) student government is like all government in that they are inept and corrupt. I pointed this out, in the same words that I have just written, to Del Conte to which he replied, "I consider it to be a fact." I consider this to be an opinion. I strongly object to any statement of this type because it shows that *The Varsity* seriously lacks objectivity when covering stories concerning SAC or any form of government, student or otherwise.

Free Speech

In my view, *The Varsity* seriously violated Milavsky's right to give his side of the situation and proves that anyone wanting to express his point of view of the story is subject to *The Varsity's* getting the last word. I believe this to be very unprofessional and very unfair. It appears that the original arguments presented by *The Varsity* were not complete and did not cover all the angles. Further, I feel that the readers were not given the opportunity to compare Milavsky's evidence with that of *The Varsity*. I would like to point out that I am not trying to defend Milavsky, or even SAC for that matter. I am merely pointing out what the student, the one who helps finance *The Varsity*, is subject to in the event that his opinions do not parallel those of *The Varsity*.

In my discussion with Del Conte it appeared that this treatment has occurred often and in reference to more than one issue. Del Conte justifies it by saying that SAC on occasion has not granted *The Varsity* "certain contracts" because SAC was not happy with the press they received. How

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the Engineering Society Presents

The President of Ontario Hydro

Milan Nastich

to speak at the
Wallberg Building
Room 116
12:30 to 1:30 p.m.
Thursday, January 21
A question period will follow

Engineering Forum:

Mechanical Eng Buys Robot

by Lee Scott
Mech Eng 8T3

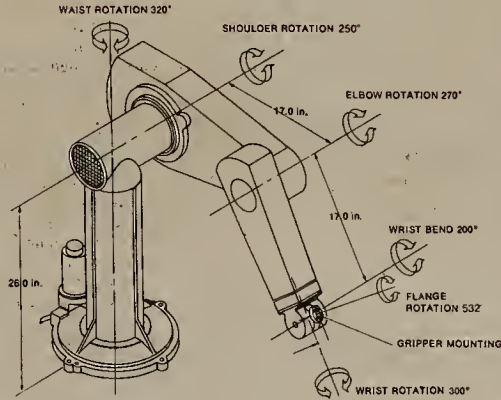
The U of T Mechanical Engineering department has recently purchased its first industrial robot—the PUMA 600 made by UNIMATION INC. of the United States. Professor D.B. Cherchas of the department describes the industrial fixed base robot as "an articulated linkage manipulator with servomechanism driven joints under the control of a digital computer that can be programmed by the user to perform a wide variety of tasks" and states that their own model will be used for both research and instruction.

Use of robots in manufacturing and assembly has grown dramatically in the last ten years. A technology initiated in North America, robotics has been imported by the Japanese who are now the world leaders in production and use of industrial robots. These machines are of the "playback" type in which the robots are taught a movement and then asked to repeat it, either by having an operator lead the machine through the motion or through numerical control, where the operator feeds numerical coordinates on a three dimensional grid to the computerized control unit. Here sequence, speed of movement, approach and departure distances and other parameters can be easily changed upon demand.

The PUMA 600 purchased by the University is one of nine industrial robot models produced by UNIMATION INC. This specific model is the most dexterous with six degrees of freedom; its motions are similar to those of the human body—waist, shoulder, elbow, flange, wrist rotation and wrist bend. The load capacity is small and as such is suitable for manufacturing operations which involve the lifting of objects less than five pounds, as opposed to their 4000 model which can lift 450 pounds. Typical applications of this 600 series are small part assembly, packaging, parts transfer and inspection.

All UNIMATION robots are programmable by standard manual control or the optional computer terminal, an option which the University chose to benefit from. According to Prof. Cherchas, the computer is one of the major reasons for the purchase of this particular robot. The complementary computer is made by the Digital Equipment Corp. and is of high quality, interfaces easily with other existing computers in the department and is familiar to the researchers. Some of the characteristics of this computer are its ability to function in real time, editing capability, instructions for looping, branching and position indexing, and programming in world, joint or tool coordinates.

Research with the robot will



Pictorial view of the robot arm bought recently by Mechanical Engineering. The six possible degrees of movement as well as overall dimensions are shown. Note that no tool is attached for the 'hand'.

involve improving the control of joints, customizing software and endpieces (the 'hand' of the robot) for given industrial tasks, modelling of dynamic behaviour and optimization of movement. Along with Prof. Cherchas, Prof. Goldenberg

from the Electrical Engineering department will be working of robot control research. Moreover, Prof. Pickett and others from the Industrial Engineering department are interested in its use for computerized manufacturing.

Looking to the future the faculty hopes to have the robot and one or more numerically controlled machines, as well as graphics terminals, plotter and computer controlled machining system. Thus, a completely integrated computerized design and manufacturing system would be accessible.

Students will benefit from this purchase in that there will be courses given at the senior undergraduate and graduate levels in robotics. The robot will be used in a laboratory situation and students will gain firsthand knowledge of the design, operation, application and economics of the robot. Indeed, this term the Mechanical Engineering department is introducing a graduate course in robotics which will be taught by the Vice-President and General Manager of the Remote Manipulation System Division of Spar Aerospace which designed the arm of the space shuttle.

The use of robots and numerically controlled machines in computerized manufacturing is a rapidly growing technology and consequently must have serious implications for Canadian industry if it is to be competitive in world markets. The purchase of this device by the faculty is of great importance for it is necessary that engineering students be aware of such technology, as well as being able to apply it.



call for 'Labatt's Blue'

Engineering Alumni Athlete



Photo by Ben Fobler

Bill Turner presenting Kathy Dumanski with her award. The Award is presented bi-monthly to an Engineering Undergraduate for their high involvement and outstanding performance in intramural athletics. Nomination forms are available from Ella, the Engineering Society secretary, in the Eng Soc offices.

W.I.M. Turner 2T5 is chairman of the Honours and Awards Committee of the Engineering Alumni Council. As an undergraduate, he won his "T" for track and rowing, and played on two Sifton Cup Basketball championship teams.

Kathy Dumanski (Mech 8T3) played on Skule's championship basketball team. Kathy also plays football, soccer, volleyball and badminton. She is the EAA women's athletic director.

Godiva Week

Tuesday, January 12

Gang Bang (12:30 p.m., King's College Circle)

The MIGHTY SKULE CANNON will challenge two other infamous cannons to a duel. The biggest bang wins.

General Smoker (5:00 p.m., Metro Library Caf)

This is a smoker open to all engineering disciplines and all years. Meet your friends in other departments! There will be free admission, free refreshments, cheap beer, and entertainment. Fourth year students are eligible for a door prize.

Wednesday, January 13

Chariot Race (12:30 p.m., King's College Circle)

The event of the year! Be there! This is where we separate the men from the boys or the engineers from the artsies. The Labatts' Blue balloon will be there too!

Engineering Marathon (5:00 p.m., Eng. Stores)

Contestants will run a preassigned course resembling a marathon. But instead of water stops, there will be 8 beer stops where a stein (8 to 10 oz.) of beer must be quaffed. Entrants must submit their name, phone number and entry fee of \$4 to Ella in the Stores. The final entry deadline is Wednesday (i.e. this day) at 2:00 p.m. Each entrant gets a prize!

Thursday, January 14

Ski Day (Pick up 7:00 a.m. outside the Eng Library)

Blue Mountain will never be the same afterward! Tickets are available at the Stores: Tow and Bus \$18, Tow \$12, Rentals \$7. People who want to rent should buy tickets early (or be faced with inappropriate equipment). Deadline for ticket sales is Tuesday, January 12 at 2:00 p.m.

Friday, January 15

Godiva's Wake (8:00 p.m. Wilson Hall Snack Bar)

Come and pay your last respects amid cheap beer, booze and good wholesome fun! yes, this is a PUB in disguise.

Engineering This Month

If you are organizing an event, or know of one, that would be of specific interest to Eng Soc members, please drop a short note about it in the CANNON mail box in the Society offices or contact Ella at 978-2917. It will be listed here free of charge.

Tuesday, January 12 to

Friday, January 15

Godiva Week

Consult the schedule of events in this newspaper and come on out with all of your friends for an entire week of good times.

Thursday, January 21

Engineering Society Presents

This month Milan Nastich, the President of Ontario Hydro will be addressing engineering students at U of T. His speech will be presented in WB 116 from 12:30 to 1:30. A question and discussion period will follow.

Tuesday, January 26

Eng Soc Full Council Meeting

The first council meeting of 1982 will take place in GB 202 starting promptly somewhere around 5:00 p.m. Be there on time and there may be refreshments or what appears to be such, in a first order approximation.

Wednesday, January 27

Faculty Council Meeting

This meeting, at an undisclosed location, is one of the few that the Faculty Council

has all year. It is imperative for all Faculty Council reps to be there. Try GB 202 at 5:00 p.m. (or call the Faculty Office for confirmation).

Saturday, January 30

Cannonball

The annual semi-formal for Engineering at U of T will be held at the Sheraton Centre Hotel. The cost is \$35 per couple, and this includes a full dinner and dancing to the sounds of "Partylights".

Monday, February 1

Eng Soc Nominations

Nominations open for the five elected executive positions of the Engineering Society Council. These positions are: President, Vice President: Administration, Vice President: Activities, Secretary and Treasurer. More information is available from Ella in the Engineering Stores. Nominations close Friday, February 26.

Summer Jobs

The summer jobs listed here were accurate at 5:00 p.m. Friday before press. Deadline changes, as well as new job additions, may occur to make these listings inaccurate throughout the month. Please visit the U of T Career Counselling and Placement Centre for accurate, up to date information.

Spar Aerospace. Mechanical, Electrical and Civil Engineering third year students. Application deadline is January 12, 1982.

Procter and Gamble Product Development. Third year Chemical engineering. Apply

on or before January 15.

Communication Engineering Services. Electrical engineering students, second, third or fourth year. Deadline for applications is January 25.

Career-Oriented Summer Employment Programs (COSEP). A program of Public Service Canada for any full time engineering student. Jobs are career oriented and are within the Federal government. Apply as soon as possible because spring is when the majority of hiring occurs. Stop by the Placement Centre for more information.

Microelectronics

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sent to a "Silicon foundry" which would produce the actual chips sending them back for testing and packaging.

Prof. Sedra is currently setting up the Centre and predicts a wait of 8 months to a year before the actual business is

underway. Preliminary marketing discussions revealed that industry is interested in such a service, so that the Centre's future looks hopeful. There is great excitement in the opening field of VLSI technology and the Centre intends to meet this new challenge at the forefront of electronics.

Varsity Policy

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juvenile on both parts. If *The Varsity* and SAC are having "lovers' quarrels", then let them iron it out in some other way. I look (and forcefully pay) for what should be honest, objective and responsible journalism. I expect that items covered in *The Varsity* should be clearly unbiased and not subject to the approval of the advertising department of the newspaper.

I tried to get the editor's views on the way in which engineering related stories are handled. At that time Del Conte could not comment but he did request a personal interview in which he would illustrate to me, by way of comparing previous years' issues to present ones, how *The Varsity* has improved in this area. Del Conte was to phone me back to arrange a time. He did not. On the basis of fairness, I do not feel it appropriate to comment further on this issue.

In conclusion I would like to point out that I am not writing this editorial out of vindictiveness. I am merely trying to

reflect on the views common among engineering students. Personally, (since this is an editorial I feel that I can be opinionated) I do not want to see an institution over 100 years old die because of the actions of its present controllers. The Milavsky situation, in my opinion, is typical of the way in which *The Varsity* handles criticism. Perhaps Voltaire said it best in his "Essay on Tolerance" in which he stated, "Think for yourselves and let others enjoy the privilege to do so too."

I think that this is the sort of stance that respectable newspapers take. According to S.G. Tallentyre, Voltaire's statement was paraphrased in "Friends of Voltaire" (1906) in which it was written, "I disapprove of what you say, but I will defend to the death your right to say it." Perhaps if Voltaire were on the editorial board of *The Varsity* it would have read, "I disapprove of what you say, and I will defend to the death *The Varsity's* right to refute it." Harsh? Perhaps.

1,2 *The Varsity*, Oct. 28, 1981

3,4 Bartlett's Familiar Quotations, 14 ed

